

What is claimed is:

1.

An LCD illuminating device comprising:

5 a display panel enclosing liquid crystal layer capable of switching between a diffusing state where light is diffused and a transparent state where light is transmitted, with a plurality of display segments;

a selection unit that selects at least one display segment of the plurality of display segments of said display panel;

10 a drive circuit that drives a display segment selected by said selection unit into said diffusing state and unselected display segments into said transparent state;

a light source having a light emitting section that generates light for illuminating said display panel; and

15 a light guide device having at least one light guide member that guides light from said light source to said display panel, wherein:

said light guide member has a reflecting surface formed at least partially in a parabolic shape, and

20 said light emitting section of said light source is located substantially at focal point of the parabolic reflecting surface.

2.

The LCD illuminating device according to claim 1, wherein:

25 said display panel includes two transparent substrates;

said liquid crystal layer is enclosed between said transparent substrates, and

electrodes electrically connecting with said display segments are provided on at least one of said transparent substrates.

5 3.

The LCD illuminating device according to claim 1, wherein:
a thickness of said light guide member is substantially the same as a thickness of said display panel.

4.

10 The LCD illuminating device according to claim 2, wherein:
a thickness of said light guide member is substantially the same as the sum of a thicknesses of said two transparent substrates.

5.

15 The LCD illuminating device according to claim 2, wherein:
a thickness of said light guide member is substantially the same as a thickness of one of said transparent substrates.

6.

The LCD illuminating device according to claim 2, wherein:
20 at least two of said light guide member are provided, with a thickness of one of said light guide members being substantially the same as a thickness of one of said transparent substrates and a thickness of the other of said light guide members being substantially the same as the sum of a thicknesses of said two
25 transparent substrates.

7.

The LCD illuminating device according to claim 2, wherein:
said light guide member is located at said transparent
substrates side where said electrodes are provided.

5 8.

The LCD illuminating device according to claim 1, wherein:
shaded sections are formed respectively at end surfaces of said
display panel where light is not incident.

9.

10 An LCD illuminating device comprising:

a display panel enclosing liquid crystal layer capable of
switching between a diffusing state where light is diffused and
a transparent state where light is transmitted, with a plurality
of display segments;

15 a selection unit that selects at least one display segment of
the plurality of display segments of said display panel;

a drive circuit that drives a display segment selected by said
selection unit into said diffusing state and unselected display
segments into said transparent state;

20 a light source having a light emitting section that generates
light for illuminating said display panel; and

a light guide device having at least one light guide member
that guides light from said light source to said display panel,
wherein said light guide member is constituted by:

25 a light guiding section that guides light of said light source

in a direction orthogonal to the display surface of said display panel;

an emitting section that emits light to an irradiated part of said display panel; and

5 a reflecting section that reflects light guided by said light guiding section to said emitting section.

10.

The LCD illuminating device according to claim 9, wherein:

10 said light guide member has side surfaces along the light propagating in said light guiding section, and
said side surfaces are formed in parabolic shape respectively.

11.

The LCD illuminating device according to claim 9, wherein:

15 dimensions of said light guide member are such that a thickness of said emitting section is substantially the same as a thickness of said display panel.

12.

The LCD illuminating device according to claim 9, wherein:

20 said display panel is provided with electrodes at an end portion of said display panel; and

a substantial range of emission of light from said emitting section of said light guide member is restricted by a conducting member connecting said electrodes of the display panel and a circuit substrate.

25 13.

The LCD illuminating device according to claim 9, wherein:
said display panel includes a transparent substrate parallel
to an optical axis of a lens for optically forming an image,
and

5 light emitted from said emitting section of said light guide
member is incident onto said irradiated part which is located
at an end surface of said transparent substrate.

14.

The LCD illuminating device according to claim 9, wherein:
10 said display panel includes a transparent substrate parallel
to an optical axis of a lens for optically forming an image,
and

said light guide member is located in the vicinity of an end
surface of said transparent substrate.

15 15.

The LCD illuminating device according to claim 9, wherein:
shaded sections are formed respectively at end surfaces of said
display panel where light is not incident.

16.

20 The LCD illuminating device according to claim 10, wherein:
said light emitting section of said light source is located
substantially at focal point of the parabolic reflecting
surfaces.

17.

25 The LCD illuminating device according to claim 6 further

comprising:

a polarizing plate inserted between said display panel and one of said light guide members, with a thickness of which is substantially the same as the sum of a thicknesses of said two
5 transparent substrates.

18.

The LCD illuminating device according to claim 12, wherein:
a thickness of said emitting section of said light guide member is substantially the same as a thickness of said display panel,
10 said emitting section having no electrodes and
said LCD illuminating device further comprising:

a polarizing plate inserted between said display panel and said light guide with the thickness of said emitting section being substantially the same as the thickness of said display panel.

15 19.

The LCD illuminating device according to claim 1 further comprising:

at least one polarizing plate inserted between said display panel and said light guide member.